Digital Games and the Violence Debate

Jo Bryce & Jason Rutter

‘To seek for evidence of the ‘the effects of media violence’ is to persist in asking simplistic questions about complicated social issues’. Buckingham (1997: 67)

Introduction

On 20th April 1999, two American high school students wearing trench coats and armed with semi-automatic guns, rifles, knives and homemade bombs went into Columbine High School in Littleton, Colorado. By 12.30 that afternoon, the students, Eric Harris (18) and Dylan Klebold (17), had killed 13 people and left over 20 injured in a 47 minute siege. Almost exactly two years later a group of families of Columbine victims filed a lawsuit against twenty five companies, including Nintendo, Sega, Sony, id Software, Acclaim, Activision, Capcom, Interplay, Eidos, and GT Interactive, seeking damages of $5 billion. They argued that films and digital games, *Doom* in particular, had directly influenced Harris and Klebold to kill their schoolmates.

Can digital games actually cause this type of behaviour? Is there really a way of linking the routine playing of digital games to spectacular and extreme events such as those of the Columbine killings?

Concerns over the negative social and psychological consequences of digital games, such as those claimed in litigation following the columbine tragedy, have been voiced by academics, parents and governments for almost the entire history of the medium. This chapter provides a critical overview of the theoretical and empirical
literature in this area. It specifically explores the research exploring the hypothesis that playing computer games, particularly those which contain high levels of violence, can increase aggressive attitudes and behaviours. A number of proposed effects of exposure to game violence and the methodologies used in such research are critically examined.

After reading this chapter, the reader should have a clear understanding of the proposed relationship between digital gaming and aggressive behaviour, the research which has examined these effects, and the theoretical and methodological criticisms which potentially explain inconsistencies across research findings. This will provide the reader with the knowledge to approach research findings with analytical caution and the ability to contextualize their claims.

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A number of negative consequences of the exposure to game violence have been proposed. These include claims that exposure to the media can cause individuals to believe that violence is a justified response to provocation, become less shocked by violence and aggression, and increase violent and aggressive behaviour in everyday life. However, attempts to link new media (and their uncontrolled availability) to the corruption of youth, women, ‘blacks’ and the working class has a long history. From popular books known as ‘Dime Novels’ in the USA and ‘Penny Dreadfuls’ in the UK, to films of the home video generation including Sam Raimi’s *The Evil Dead* and Stanley Kubrik’s classic *A Clockwork Orange*, there have been fears that susceptible people will be made violent or otherwise corrupted through exposure to these media. These fears have influenced the research agenda for a large proportion of research on
digital games, and much of this research has been based upon the theoretical and methodological frameworks of ‘media effects’ research.

Interestingly, authors such as Dill and Dill (1998) and Anderson and Bushman (2002) have argued that the consequences of exposure to game violence are actually more harmful than that of other media due to the interactive nature of games, schedules of reward and punishment, and active engagement with the game environment. The difference in the relationship between the gamer and game character has also been claimed to differ to that of the spectator/viewer of film and television violence (Dill and Dill, 1998; Anderson et al., 2003). As Emes (1997) argues:

Television viewing is a passive experience; the viewer participates only as an observer. Playing video games, by contrast, is active, requiring more concentration and physical action. Video games involve the abstract simulation of aggression, whereas the violence depicted on television often imitates reality. (Emes, 1997: 411)

The viewer of film/television violence has been conceptualized as a passive spectator, whereas the digital gamer is interactively engaged in controlling a game character and influencing the development of the game (see, Giddings & Kennedy and Küchlich, this volume). This interactivity has been claimed to increase identification with the character and their behaviour, leading to stronger reinforcement and modelling of such behaviour (Anderson et al., 2003). The media effects literature suggests that identification with the aggressor increases the amount of violence directed towards a victim (Leyens & Picus, 1973) and this suggests that identification with violent game characters may increase aggressive and violent behaviour in everyday life.
These are serious issues for anyone engaged in researching digital games and given the quantity and methodological design of this research, it is important to develop an awareness and understanding of the key issues involved, the claims made by researchers, and criticisms of their research and analysis. The central issue in this area is not the violent nature of some digital games *per se*, but that engagement with them might encourage aggressive attitudes and behaviour in everyday life.

**Violent game content**

A number of researchers have examined the characters, actions and themes of digital games in order to quantify the amount of violence contained within popular games at particular times. For example, a content analysis by Provenzo (1991) estimated that 40 of the 47 most popular computer games he surveyed contained high levels of violence. A more recent analysis conducted by a panel of parents rated the violent content of 78 the most popular computer games in 1999. This study found that 25 per cent of the games contained intense representations of violence and 30 per cent contained some representations of violence (Walsh, 1999). Another study suggested that 89 per cent of games contain some level of violent content (Children Now, 2001).

It is hypothesized that frequent exposure to such violent game content increases aggressive attitudes and behaviour (Anderson et al., 2003; Dominick, 1984; Anderson and Dill, 2000). Studies examining this hypothesis have used self-report questionnaires to examine whether there is a relationship between the amount of time spent playing computer games and aggressive behaviour have had largely contradictory results. Lin and Lepper (1987) and Dominick (1984) found a correlation between frequency of gaming and aggressive attitudes and behaviours in male schoolchildren. However, this raises the question of causality - whether aggressive children prefer playing violent video games or whether video games make children...
violent. Other researchers have found that playing digital games had a calming effect on children (Kestenbaum and Weinstein, 1985), leading them to hypothesize that games help channel aggression, manage conflict and competition. They also found that regular gamers used play as a method of relaxation whereas infrequent gamers were more interested in competition and winning at all costs (Kestenbaum and Weinstein, 1985). This contradiction in research results is common and a critical examination of why this issue is provided in a later section of the chapter.

**Priming and desensitisation**

Exposure to violent game content has been hypothesized to cause individuals to think more aggressively through the priming and elaboration of aggressive thought networks (Anderson and Morrow, 1995; Anderson, Benjamin and Bartholow, 1998; Anderson et al., 2003). It is argued that digital games offer ‘scripts’ or models for appropriate behaviour in various circumstances. Scripts are cognitive plans which guide expectations, perceptions and behaviours in specific situations (such as how to respond to interpersonal conflict or how to behave appropriately in restaurants). These may then be retrieved or activated in the future to guide behaviour in a similar situation (Anderson and Bushman, 2002b). The linkage between aggressive thoughts, emotions and behaviours has been claimed to be reinforced by repeated exposure to game violence, increasing their accessibility to activation in the presence of aggressive cues and situations, and subsequent aggressive behaviour (Berkowitz, 1984, 1993; Anderson and Morrow, 1995; Anderson, Benjamin and Bartholow, 1998; Anderson et al., 2003).

Evidence for these effects have been demonstrated by research investigating the consequences of exposure to TV and film violence, in which the cues associated with violence, such as the presence of weapons, have been found to lead to increased
aggressive thoughts and behaviours measured by faster recognition of aggressive
target words in a word recognition task (Anderson, Benjamin and Bartholow, 1998; Bartholow, Anderson, Benjamin and Carnagey, in press). Other experimental research compared the reactions of a control group of participants exposed to non-violent game content and an experimental group exposed to violent game content to an ambiguous scenario. Those participants exposed to game violence reported increased expectations towards a violent outcome in response to potential conflict scenarios (Bushman and Anderson, 2002).

Exposure to violent game content may also lead to the weakening of inhibitions against behaving aggressively and increase acceptance of using aggression to resolve conflict (Berkowitz and Geen. 1967; Dill and Dill, 1998; Huesmann et al., 2003). In addition, it has been claimed that gamers may become desensitized to the violence depicted within games and demonstrate reduced physiological reactivity to observation of violence (Carnagey, Bushman and Anderson, 2003). This increasing normalisation further reinforces aggressive scripts and increases the likelihood that they will respond in an aggressive manner when faced with a conflict situation (Anderson et al., 2003; Dill and Dill, 1998; Huesmann et al., 2003).

Experimental research suggests that participants with a more aggressive personality (compared with those classified as less aggressive) showed decreased physiological arousal when repeatedly exposed to scenes of violence in an experimental study (Lynch, 1994). There is also evidence this leads to desensitisation towards real life representations of violence, and increases unhelpful behaviour towards victims (Thomas and Drabman, 1975; Carnagey et al., 2003). However there has been no research examining whether decreased arousal actually stimulates aggressive behaviour, so the role of desensitisation in determining short-term effects
of exposure to game violence in the investigation of aggression is unknown (Anderson et al., 2003).

**Play and arousal**

Playing violent computer games has also been claimed to lead to negative changes in affect or mood and increased levels of arousal which may lead to increased aggression to provocation after exposure to game violence (Anderson et al., 2003; Anderson and Ford, 1986). The excitement provided by exposure to violent game content has been claimed to have a number of physiological effects, including increased heart rate, systolic and diastolic blood pressure which are related to the arousal of aggression (Emes, 1997; Anderson et al., 2003; Geen and O’Neal, 1969). This may lead to the misattribution of arousal to provocation by others and aggressive behavioural responses (Zillman, 1971, 1982).

Experimental studies have examined whether there are changes in affective states and/or levels of arousal before and after playing a violent, compared with a non-violent, game. Participants are randomly assigned to either an experimental group in which measures of various affective states or arousal (for example, hostility, irritability, blood pressure) are taken before and after playing a violent computer game, or a control group in which the same measures are taken before and after playing a non-violent computer game. Some studies have found evidence of significantly greater changes in affective states and levels of arousal after playing violent computer games, compared with those of the participants in the control group (Anderson and Ford, 1986; Ballard and Weist, 1996) whilst other studies show no evidence of such an effect (Scott, 1995; Nelson and Carlson, 1985).

Exposure to game violence is also hypothesized to influence behaviour through the modelling and social reinforcement of the behaviours they contain.
(Bandura, 1973, 1986, 1994; Anderson et al., 2003). Children learn behaviours through processes of socialisation and systems of social reward and punishment from the family, peer-group, education and the media (Bandura, 1973, 1986, 1994). It is argued that gamers will imitate behaviour observed within their family, peer-groups and computer games when the person engaged in that behaviour is similar or attractive to them, when they identify with them, when the context is realistic and when the behaviour is followed by rewards (Bandura, 1986; Anderson et al., 2003).

Within such a theoretical perspective, violent game content has been claimed to reinforce the idea that aggressive behaviour is acceptable, increasing the likelihood that individuals will imitate violent game content (Anderson and Dill, 2000; Dill and Dill, 1998). Successfully playing a violent game requires the effective use and reward of aggression within the game environment, and this has been argued to encourage further play and exposure to violent content, increasing the priming of aggressive scripts and modelling of game violence (Dill and Dill, 1998). The often justified, rewarded and fun nature of represented game violence may also lead to the development of positive attitudes towards the use of aggression (Funk, Buchman, Jenks and Bechtoldt, 2003).

Dominick (1984) argues that game narratives often frame the game character as using justified violence against an ‘evil’ opponent who is using violence in an unjust, immoral or illegal way. Research suggests that justified violence, particularly that which has positive consequences for the perpetrator, arouses greater levels of aggression in spectators, compared with that which is portrayed as unjustified (Anderson et al., 2003). Such effects increase aggressive behaviour and weaken inhibitions against behaving aggressively (Geen, 1990; Berkowitz and Geen, 1966; Geen and Stonner, 1973).
Research on processes of reinforcement and imitation combine experimental designs with observations of child/adolescent play. Participants are randomly assigned to either a control group in which they play a non-violent game, or an experimental group in which they play a violent game. Both groups play their respective games for the same amount of time and are then observed in a free-play situation. Such designs allow an examination of whether the play of the children in the experimental group (those who have played the violent game) is more aggressive than those in the control group (those who have played the non-violent game). As with the research examining the relationship between frequency of gaming and aggressive attitudes/behaviours, research results in this area are often conflicting or contradictory. Some studies have found evidence that children in the violent game condition are rated as behaving more aggressively after playing, compared with those in the non-violent game condition (Cooper and Mackie, 1986; Irwin and Gross, 1995), whereas other studies find no such relationship (Graybill, Kirsch and Esselman, 1985; Winkel, Novak and Hopson, 1987).

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**Moderating variables**

In the previous section of the chapter we examined the proposed consequences of exposure to violent game content and associated research. The issue of causality was identified as central but potentially controversial. The ‘casual effects model’ (Harris, 2000) which dominates much of the research in this area is problematic because of the assumption that correlation equals causation. An alternative perspective reverses the relationship and incorporates a consideration of the role of moderator variables in the
relationship between exposure to violent game content and subsequent attitudinal or behavioural effects (Anderson et al., 2003; Wilson et al., 1997). This recognizes that vulnerability to the proposed effects of exposure to game violence may not have an equally negative influence on all individuals.

Individual personality characteristics have been hypothesized to moderate the effects of exposure to media violence. For example, highly aggressive individuals may be attracted to the use of violent media as a means of reinforcing and justifying their attitudes and behaviours (Bushman, 1995; Gunter, 1983; Anderson et al., 2003; Huesmann et al., 2003). Research suggests that highly aggressive individuals show greater development of aggressive thoughts and behaviour in response to exposure to game violence (Bushman 1995; Anderson and Dill, 2000; Kiewitz and Weaver, 2001). From this perspective, it is unlikely that individuals with no predisposition towards aggressive behaviour would respond aggressively to violent game content. Whilst the importance of this is frequently acknowledged by researchers, it has not received sustained theoretical or empirical attention, and remains an important direction for future research.

**Critiques of the research literature**

The research outlined above has produced a range of apparently contradictory findings rather than producing a coherent understanding of the possible consequences of exposure to violent game content for the development of aggressive attitudes and behaviour. In order to understand the contradictions in research findings, it is useful to look at a number of important methodological and analytical critiques of the research literature.
Correlation and causation

In some of the research conducted in this area, and certainly in popular discourse, there is often confusion between ‘correlation’ and ‘causation’. For example, self-report questionnaire designs use correlations to examine whether there is a statistically significant relationship between two measured variables. If a correlation is significant, it can be claimed that there is a relationship between the two variables, but it is incorrect to interpret this as a casual relationship.

This can be illustrated using a hypothetical study which found evidence of a significant relationship between frequency of playing violent computer games and aggressive behaviour. What does this result that actually mean? It suggests that as the frequency with which participants play violent computer games increases, so does the frequency of aggressive behaviour. The important point to remember is that this does not mean that playing violent games causes aggressive behaviour, only that there is evidence of a relationship between the two.

Similarly, experimental designs in which participants are randomly assigned to play a violent or non-violent game only allow a statistical examination of differences in the measured outcome variables (such as aggressive play, word recognition times) between the experimental and control groups. In a similar manner to correlation, finding significant differences in the outcome variable between these two groups can only suggest a relationship between the experimental variable (level of game violence) and the outcome variable (aggressive play). This does not provide evidence of a causal link between the measured variables, only the existence of a relationship. Determining causal relationships between measured variables requires the use of more sophisticated and powerful statistical data analyses.
Cross-sectional research designs

The use of cross-sectional designs in the majority of research in this area is problematic because they only provide the opportunity to examine the short-term effects of exposure to game violence and provide a snapshot of relationships between measured variables. Speculating about the long-term effects of playing violent computer games based on the results of research using such designs is not statistically valid, and requires longitudinal research. There has been a lack of this type of research because longitudinal studies require participant involvement over a long period of time (such as testing every 5 years for 20 years). This type of research is expensive and often suffers from high dropout rates and difficulties in maintaining participant involvement. Therefore, the conclusions that can be drawn about the long-term effects of exposure to game violence based on the existing literature are limited. If exposure to game violence influences attitudes and behaviour, such effects are likely to develop over a long period of time. Conclusions cannot be extrapolated from the results of cross-sectional research designs, though this has been increasingly recognized by researchers in this area (Anderson et al., 2003; Carnagey, Bushman and Anderson, 2003).

Inconsistencies in operationalisation of variables

Many of the studies investigating the relationship between violent game content, aggressive attitudes and behaviours use a wide variety of definitions of the variables ‘game violence’, ‘aggression’, ‘aggressive personality’, and ‘aggressive behaviour’, as well as different methods of classifying games as ‘violent’ or ‘non-violent’ (Goldstein, 2001).
These inconsistencies are demonstrated when considering the equivalence of the computer games used in experimental research. The process by which specific games are selected and classified is generally only vaguely discussed in the design sections of individual studies. The need for equivalence of games in empirical designs is central to the objective of controlling all sources of experimental bias, or factors unrelated to the aims of the study which differ between the experimental condition and the control condition. Ideally, the games chosen should only differ on the level of violent content as differences on other dimensions (for example level of interactivity, pace, complexity or genre) restrict the possibility to isolate the influence of exposure to game violence on subsequent measures of aggressive affect or behaviour. The researcher cannot definitively claim it is exposure to violent content which accounts for changes in the outcome variables. For example, the games used by Anderson and Dill (2000) in their experimental study of the effect of exposure to game violence on behaviour were Myst (non-violent) and Wolfenstein 3D (violent). The nature of gameplay and the objectives of these games are very different, regardless of their violent content, and this restricts the conclusions which can be drawn from the research results. Though this limitation has been recognized by some researchers, including recently Anderson and Dill themselves (Anderson et al., 2003; Anderson and Dill, 2002; Anderson and Morrow, 1995; Nelson and Carlson, 1985), it is not a common practice. Standardized methods for classifying games as violent or non-violent are required to increase comparability of results across studies.

Empirical research also uses proxy measures of aggressive behaviour such as observations of free play, competitive reaction times, word recognition tasks and administering shocks to an opponent. However, equating free or ‘rough and tumble’ play or the intensity of administering shocks to an alleged opponent with aggressive
behaviour is problematic. For example, whilst children’s play may appear to be aggressive, it is qualitatively different from truly aggressive behaviour (Goldstein, 2001).

**Sample size and generalisability**

Sample sizes are relatively small in the experimental and cross-sectional research designs reported in the literature. For example, Lin and Lepper (1987) had 210 participants in their cross-sectional self-report study, Lynch (1994) had 75 participants for their experimental study, and Irwin and Gross (1995) had 60 participants for their observational study. Whilst it is important to recognize that different research designs have different requirements for valid sample sizes (for example, experimental designs require less participants than self-report studies), the size of the sample obtained influences the results of statistical analysis and the generalisability of the results to the general population. Given the popularity of computer gaming, it is important to consider the extent to which the results of a study using 100-200 participants reflects the relationship between measured variables in all gamers or sub-groups of gamers. Gamers are not a homogenous group, factors such as frequency of play, commitment, gender, age, and genre preference all create different sub-groups of gamers. Unfortunately, the tendency to equate violent games with all computer games, together with the notion of gamers as a homogenous group, further impedes the ability to draw general conclusions regarding causality in relation to the consequences of exposure to violent game content.

**Extrapolating to the everyday**

Another criticism of empirical research in this area relates to contextual differences between playing a computer game in an experimental, lab-based situation
and everyday gaming practices (Goldstein, 2001). Participation in experimental designs and random assignment to an experimental or control group provides no choice for participants over the game they play. This introduces a source of bias into the study as participants may dislike or be unfamiliar with the game. This may frustrate participants and account for the changes in attitudes and behaviour reported in some studies. It is of greater theoretical value to examine how individuals play and experience violent game content in the context of their everyday lives and leisure practices. This would provide more naturalistic data and allow stronger conclusions regarding the consequences of exposure to game violence to be drawn. It would also allow a more detailed examination, and recognition of, the influence of other factors in the development of aggressive behaviour such as developmental stage, gender and individual differences. However, such research is also costly and time-consuming to conduct, another factor explaining the bias towards the use of cross-sectional designs.

Understanding how games are played and experienced in the context of everyday life is an important initial step in examining the potential consequences of exposure to violent game content within the everyday lives of children and adolescents.

Conclusions

Research on the proposed consequences of exposure to game violence is inconclusive and often contradictory. Further, the current body of research continues to demonstrate a number of issues which restrict the validity of attempts to apply questionnaire, self-report and experimental research results to the understanding of the antecedents of violent and aggressive behaviour in everyday life. For example, research has strongly focused on young children and adolescents, making extrapolation to other age groups problematic. This focus contrasts with the broad
demographic of the computer gaming public where the average US digital gamer is 30 and the average game buyer is 36 years old.

Also, as experimental methods are designed to demonstrate a relationship between a stimulus and an action, they must assume that the target stimulus, in this case digital games, is asocial. As is demonstrated in several chapters in this volume, digital games are profoundly social in content, technology and use. Due to this, any digital game is difficult to conceptualize as a single discrete variable. Style of gameplay, duration of play, sound, graphics, imagery, narrative, experience, enjoyment, and familiarity with equipment are all gaming-related factors experienced by gamers which have not been effectively delineated and explored by media effects researchers. This further demonstrates the failure of experimental research on digital games to adequately consider the role of these factors and their everyday, naturalistic contexts of experience.

As with the natural sciences, experimental effects research can only measure theoretically specified variables and draw conclusions about their potential attitudinal and behavioural effects. It cannot account for interactions that take place outside the experimental environment. For digital games, this means that experimental results cannot neatly be applied to the potential consequences of playing digital games within leisure and social contexts. They cannot adequately elaborate the complex motivational and experiential processes which surround decisions when and how to play games. Moreover, the fascination with digital games as a stimulus for aggressive behaviour succeeds in reducing the importance of broader social and cultural factors known to have a significant impact on aggressive attitudes and behaviour. Much of the research described above fails to incorporate an examination of the influence of factors such as exposure to domestic violence, poverty and peer group relationships,
and isolates the influence of the media on childhood social and cognitive development from its social and developmental context.

It is, therefore, important to examine the way in which game violence is experienced and the meanings constructed in relation to it. Approaches within media studies which examine the reception of violent media content are important in the developing context of digital games research as it can provide greater understanding of the processes by which exposure may increase aggressive attitudes and behaviours within the context of play, leisure and everyday practice (Gauntlet, 1996).

Given such a framework, it is impossible to demonstrate - and difficult to believe - that playing *Doom* turned Eric Harris and Dylan Klebold into killers in the absence of other psychological, social and cultural factors. Whilst the media reports that Harris spent time producing mods of the game, and that one of the boys called the sawn off shot gun used in the attack ‘Arlene’ after Arlene Sanders - a character from the novel *Doom: Hell On Earth* rather than the game - such stories are not evidence or proof of a definitive causal link.

This also raises the question why digital games should be viewed as a catalyst for violence rather than any of the other factors which characterized the boys’ lives. Reporting of the event shows that Harris and Klebold were exposed to a range of factors which may, or may not, have influenced events. Singly or together they were victims of school bullying, had parents with military training, combined a part time job with education, had a history of petty crime, were enrolled on a juvenile diversion program, were taking medication for depression, had access to weapons, and were in home environments where guns and bombs could be stored in a bedroom without being noticed.ii
In March 2002, U.S. District Court Judge Lewis Babcock dismissed the lawsuit filed by the families of the Columbine victims. He stated, not that there was no link between the games and film the killers had seen and their subsequent behaviour, but that it was unreasonable to hold the creators liable for unforeseen acts of others. He said that requiring anyone who creates artistic or media content to anticipate and prevent ‘the idiosyncratic, violent reactions of unidentified, vulnerable individuals’ in their audience was impossible. As the quotation from David Buckingham at the beginning of this chapter suggests, the causes of violent and aggressive behaviour in contemporary society are more complex than much of the media effects research would suggest and require a recognition of the wide range of other potential causal factors.

**Relevant web sites**

**Brad Bushman:** [www-personal.umich.edu/~bbushman](http://www-personal.umich.edu/~bbushman)

**Coalition of Entertainment Retail Trade Association:** [www.erlam.org](http://www.erlam.org)

**Craig A. Anderson:** [www.psychology.iastate.edu/faculty/caa](http://www.psychology.iastate.edu/faculty/caa)

**Entertainment Software Rating Board:** [www.esrb.org](http://www.esrb.org)

**ESA on Essential Games and Violence:**


**Media Awareness Network:** [www.media-awareness.ca/english/issues/violence](http://www.media-awareness.ca/english/issues/violence)

**National Institute on Media and the Family:** [www.mediafamily.org/research](http://www.mediafamily.org/research)

**Pan European Game Information:** [www.pegi.info](http://www.pegi.info)

**IGDA Anti-censorship Statement:** [www.igda.org/censorship](http://www.igda.org/censorship)
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BREAKOUT BOX 12.1

‘Violence’ and ‘Aggression’?

What is actually meant by the terms ‘violence’ and ‘aggression’? These two concepts are commonly used in this research area but are notably different. Whilst the terms ‘game violence’ and ‘violent behaviour’ are often used in the media and the research literature, the majority of research studies actually examine the development of aggressive attitudes and behaviour. However, as aggression is a social concept, observable actions are used as indicators or proxy measures. For example, aggressive behaviours can include attacking a doll, spreading rumours, play aggression, completing ambiguous scenarios with aggressive endings, self reporting of behaviour, as well as time taken to recognize aggressive target words after priming through exposure to game violence. The definitional differences between the two concepts are outlined below.

**Aggression**

‘Human aggression is any behaviour directed towards another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, the perpetrator must believe that the behaviour will harm the target, and that the target is motivated to avoid the behaviour.’ (Anderson and Bushman, 2002b:28).

**Violence**

‘Violence is aggression that has extreme harm as its goal. All violence is aggression, but many instances of aggression are not violent. For example, one child pushing
another off a tricycle is an act of aggression but is not an act of violence’ (Anderson and Bushman 2002b:29).
BREAKOUT BOX 12.2

**The General Aggression Model**

A theoretical and empirical attempt to combine the suggested consequences of exposure to violent game content is the General Aggression Model or GAM (Anderson, Anderson and Deuser, 1996; Bushman and Anderson, 2002). This model integrates perspectives on the learning, development, instigation and expression of human aggression, focusing on the knowledge structures (scripts and schemas) created through processes of social learning (Anderson and Dill, 2000). It also builds on research examining the use of knowledge structures in perception, interpretation and decision-making (Anderson and Bushman, 2002). The model specifies that knowledge structures develop from experience and influence perception at multiple levels, including complex behavioural sequences. Such responses can become automatized with use and be linked to affective states, and beliefs, guiding interpretations and behavioural responses to the social environment of individuals within their everyday lives (Anderson and Bushman, 2002).

1 A reduction in the physiological factors (e.g., heart rate, blood pressure) associated with affective states such as excitement.

2 Marilyn Manson was also singled out in media coverage as one of the factors that made Harris and Klebold act as they did. One of Manson’s articulate responses can be found at www.gothcentral.com/gothcentral/QuickShop/textfiles/manson.asp. (Retrieved 15th March 2005)